

METHOD OF FABRICATING A DOUBLE GATE MOSFET DEVICE

ABSTRACT OF THE INVENTION

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A method of fabricating a double gate MOSFET device is provided. The present invention overetches a silicon layer overlying a buried oxide layer using a hard mask of cap oxide on the silicon layer as an etching mask. As a result, source, drain and channel regions are formed
10 extending from the buried oxide layer, and a pair of recesses are formed under the channel regions in the buried oxide layer. The channel is a fin structure with a top surface and two opposing parallelly sidewalls. The bottom recess is formed under each opposing sidewall of the fin structure. A conductive gate layer is formed straddling the fin structures.
15 The topography of the conductive gate layer significantly deviates from the conventional plainer profile due to the bottom recess structures under the channel regions, and a more uniformly distributed doped conductive gate layer can be obtained. Hence, the depletion effect of the conductive polysilicon gate while operating the device can be suppressed
20 and the device drive-on currents can be further enhanced.

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